

Marine isopod crustaceans collected from Breid Bay and Lutzow-hol m Bay, Ant ar ct i ca, during the JARE- 26, Crui se

journal or publication title	Bulletin of the Toyama Science Museum
number	28
page range	63- 80
year	2005- 03- 25
URL	http://repo.tsm.toyama.toyama.jp/?action=repository_uri&item_id=822

**Marine isopod crustaceans collected from Breid Bay
and Lützow-holm Bay, Antarctica, during the JARE-26, Cruise**

Noboru Nunomura

Toyama Science Museum

1-8-31 Nishinakano-machi, Toyama, 939-8084 JAPAN

南極ブライド湾ならびにリュッツホルム湾から JARE-26 航海において採集された海産等脚目甲殻類

布村 昇

富山市科学文化センター

939-8084 富山市西中野町1-8-31

南極海域の等脚目甲殻類は独特のグループが生息し、大型種を多く含むことなど著しい形態上の特徴がみられるものがあること等により、以前から比較的多くの研究がなされてきているが、南極昭和基地付近の海域では蒲生(1991)を除けば、まとまった報告がなかった。この度、1984年から1985年にかけて国立極地研究所によって行われた南極昭和基地付近の海域の Breid Bay 及び Lützow Holm Bay での調査 (JARE-26) の際に採集された等脚目甲殻類の研究する機会に恵まれたので、その成果を述べる。今回はミズムシ亜目を除く残りの4亜目について分類学的研究を行い、6科8種を確認した。うち、2種は未記載種であることが判明し、新種記載を行った。

有扇亜目のセロリス科 Serolidae には2種が含まれていたが、1種は硬い甲被をもち、腹尾節後端が凹む等の特徴があり、既知種 *Serolis polita* Pfeiffer, 1877や *Serolis bouvieri* Richardson 1906と類似するが、腹尾節上の刺の数や配列等の点で明瞭に違っていて、新種 *Serolis hoshiaii* として記載した。もう1種は *Ceratoserolis trilobitoides* (Eights, 1833) の記載とほぼ一致し、本種と同定できるが、腹尾節上のトゲの数や配列等の点等で異なっており、種内変異の範囲内と考えられる。グソクムシ科には *Aega* 属の2種が含まれており、一つは *A. antarctica* Hodgson, 1910と考えられが若干の差違が見られるので、差違を記載した。2種目は種名決定できなかった。

ヘラムシ亜目には2種類あり、1種は Chaetiliidae に属する *Glyptonotus antarctica* Eights, 1952であり、従来の記載とよく一致するが、刺の数の差違が見られた。2種目はオニナナフシ科 *Antarcturus* 属の未記載種であり、新種 *Antarcturus breidensis* として記載した。

ウミナナフシ亜目では *Accalathura gigantissima* Kussakin, 1967が確認されたが原記載との差違が若干認められたので記載した。さらに、ウミクワガタ (グナチア) 亜目には *Euneognathia gigas* (Beddard, 1886) が確認され、若干の形態的差違が認められたので記載した。

模式標本は国立極地研究所に保管されるが、一部の副模式標本などは富山市科学文化センターに保管される。

Key words : Isopoda, Antarctic, Breid Bay, Lützow-holm Bay, *Serolis hoshiaii*, *Antarcturus breidensis*, taxonomy, new species

キーワード : 等脚目, ワラジムシ目, 南極, ブライド湾, リュッツホルム湾, 分類, 新種

1. Introduction

The isopod crustaceans of the Antarctic and Subantarctic Seas have been studied by many scientists. But there are a few records of isopods from Breid Bay and Lützow-holm Bay, Antarctica.

In 1984-85, during the JARE-26 Cruise, a benthic survey was carried out by many scientists of National Institute of Polar Research. And the isopods crustaceans of the sea were sent to me for identification through the courtesy of the staffs of the National Institute of Polar Research and Dr. Masatsune Takeda of the National Science Museum, Tokyo. The specimens examined will be deposited in the National Institute of Polar Research and the Toyama Science Museum.

2. Sampling station

Beam-trawl samplings were carried out in Breid Bay and the Gunnerus Bank, Lützow-Holm Bay by the ice breaker Shirase from December 1984 to February 1985. The sampling stations and details topography of the sampling areas are referred to Numanami and Okutani (1990), and Takeuchi and Takeda (1992).

3. Systematics

Order Isopoda

Suborder Flabellifera

Family Serolidae

Serolis hoshiaii, n. sp.

(Fig. 1)

Material examined: 2♂♂ (1♂ holotype, 45.0 mm in body length and 1♂ paratype, 26.8 mm in body length), Gunnerus Bank, (68° 23.57'S; 34° 07.5'E), 281-282m in depth, Feb. 25, 1985. Type series is deposited as follows: holotype (AO-2495-0001) in the National Institute of Polar Research and a paratype (TOYA Cr-13105) in the Toyama Science Museum.

Description of male: Body (Fig. 1A) flattened, 1.3 times as long as wide. Medial process on anterior margin of cephalon protruding. Pleotelson with a relatively big seta and a pair of small protuberances on medial area and a small concavity at the posterior medial area.

Antennule (Fig. 1B): peduncle 3-segmented; first segment square; second and third segments long; flagellum composed of 38-44 segments. Antenna (Fig. 1C) reaches third pereonal somite: peduncle composed of 5 segments; first to third segments short; fourth and fifth segments stout and long; flagellum composed of 17-18 segments. Clypeus and frontal lamina (Fig. 1D) narrow. Right mandible (Fig. 1E): pars incisiva composed of a single tooth; lacinia mobilis also single-toothed; a penicil behind lacinia mobilis; palp 3-segmented; second segment with 16-17 setae on inner margin; terminal segment tapering towards the tip, with 9-10 setae on inner margin. Maxillula (Fig. 1F): outer lobe with 10 setae at the tip; inner lobe short and round. Maxilla (Fig. 1G): inner lobe with 20 setae on each ramus of outer lobe, with 2 setae. Maxilliped (Fig. 1H): endite rectangular, with 2 stout teeth on distal margin; palp 3-segmented; first segment square, with 2 setae; second segment broad, with 2 setae; terminal segment with a tuft of 5-6 setae; epipodite trapezoidal, with a spine at the tip.

Pereopod 1 (Fig. 1I): basis rectangular; ischium half the length of basis; merus short and rectangular; carpus triangular; propodus round and stout, with many short setae on inner margin; dactylus long, approximately as long as propodus. Pereopod 2 (Fig. 1J): basis rectangular; ischium 2/3 time as long as basis; merus a little shorter than ischium; carpus almost square; propodus stout inner part of basal part swollen, with 6 setae on inner margin. Pereopods 4 to 6 (Fig. 1K) similar in shape: basis rectangular; ischium 3/4 as long as basis; merus rectangular, with 3 groups of 2-3 setae on inner margin; carpus rectangular and 1.3 times longer than the preceding ones, with a series of 9-12 setae on inner margin; propodus with a series of setae; dactylus slender. Pereopod 7 (Fig. 1L) a little shorter than the pereopod 6: basis oblong; ischium about half length of basis; merus, carpus and propodus rectangular, with several setae on inner margin; dactylus slender.

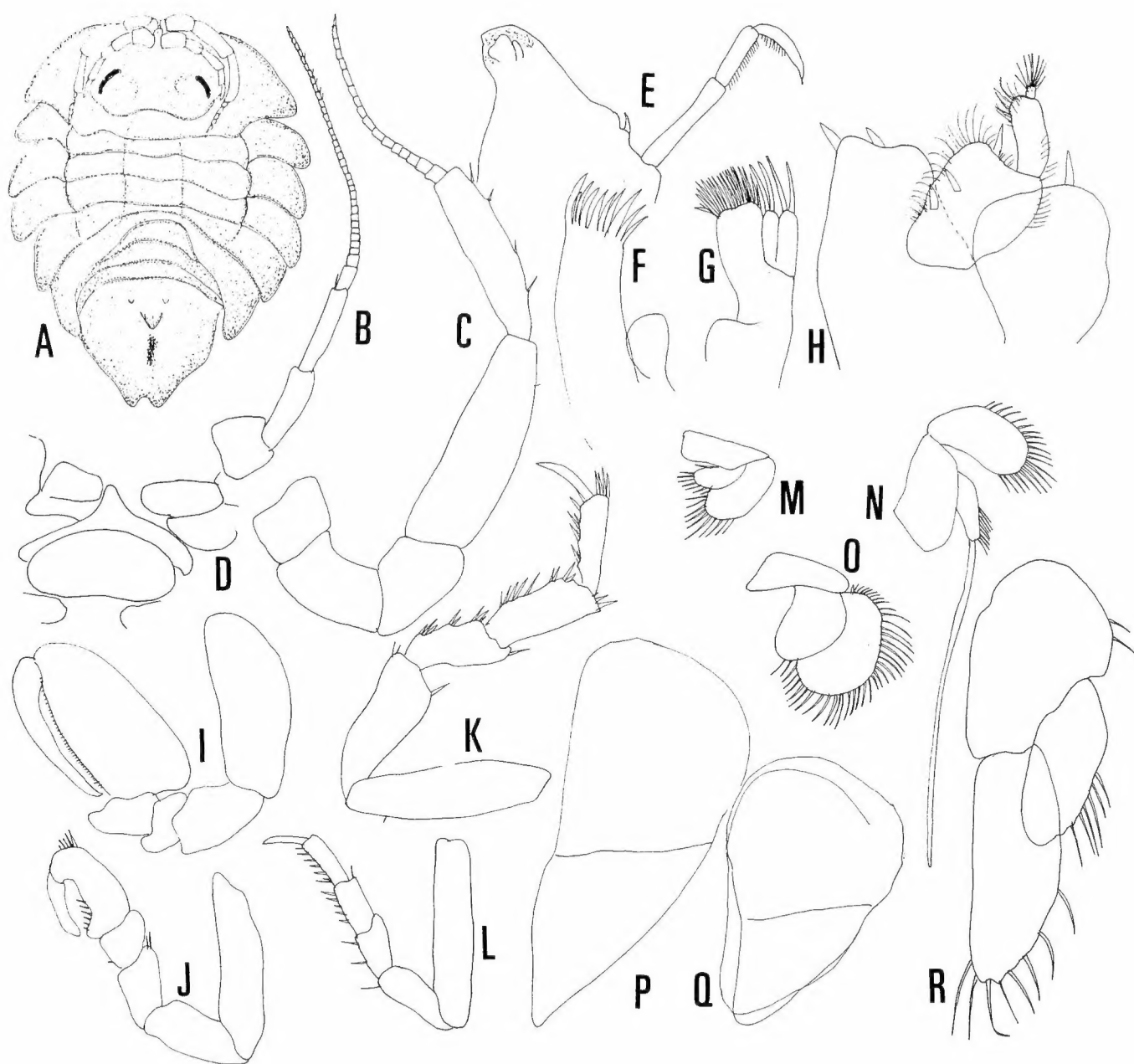


Fig.1. *Serolis hoshiai* n. sp.

A: Dorsal view; B: Antennule; C: Antenna; D: Frontal lamina and clypeus; E: Mandible; F: Maxillula; G: Maxilla; H: Maxilliped; I: Pereopod 1; J: Pereopod 2; K: Pereopod 6; L: Pereopod 7; M: Pleopod 1; N: Pleopod 2; O: Pleopod 3; P: Pleopod 4; Q: Pleopod 5; R: Uropod. (All: Holotype male).

Pleopod 1 (Fig. 1M) small: basis rectangular; endopod smaller than exopod. Pleopod 2 (Fig. 1N) in male: exopod lanceolate, longer and wider than endopod; endopod narrow, $\frac{2}{5}$ as wide as exopod; stylus very long, 5 times as long as endopod. Pleopod 3 (Fig. 1O) similar to pleopod 1: both rami elliptical. Pleopod 4 (Fig. 1P) big: exopod with a suture line on medial area. Pleopod 5 (Fig. 1Q) 0.7 times as long as pleopod 4, but a little shorter than the preceding ones. Uropod (Fig. 1); basis pentagonal; exopod lanceolate with 8 setae; exopod $\frac{3}{4}$ as long as endopod, with 6 setae.

Female: Roughly similar to male except for copulatory apparatus.

Etymology: The species is named in honor of Dr. Takao Hoshiai of the former director of the National Polar Research who had contributed the developments of polar science in Japan.

Remarks: The present new species is most closely allied to *S. plolita* Pfeiffer, 1887, but differs in the following features: (1) deeper concavity of medial posterior end of pleotelson, (2) narrower eyes and the position of the both

eyes, (3) less acute tip of each pereonal somite and (4) absence of protuberances of the posterior positions of eyes.

The present species is also allied to *Serolis bouvier* Richardson, 1906 reported from Antarctic Peninsula, Booth-Wandel Island, Flanders Bay, Palmer Archipelago and many other Antarctic areas, but the former is separated from the latter in the following features: (1) narrower elevation of dorsal surface, (2) smaller triangular elevation on pleotelson (instead of round one), (3) lack of medial process of cephalon and (4) narrower concavity at the posterior medial area.

***Ceratoserolis trilobitoides* (Eights, 1833).**

(Figs. 2 and 3)

Serolis trilobitoides: Eights 1883. p.53, 2pls.

Ceratoserolis trilobitoides: Cals, 1977. p.233, figs. 1-2.

Material examined: 1♂ (56.8 mm in body length) and 2♀♀ (63.3-65.2mm, in body length), Gunnerus Bank, (68° 23. '57'S; 34° 07.5'E), 281-282m Feb. 25, 1985. Specimens are deposited as follows: a specimen (AO2496-0001) at the National Polar Research Institute and 2 specimens (TOYA Cr-13106 and 13017) at the Toyama Science Museum.

Description of male: Body flat and round, 1.1 times as longer than the widest part of pereonal somite. Color dull

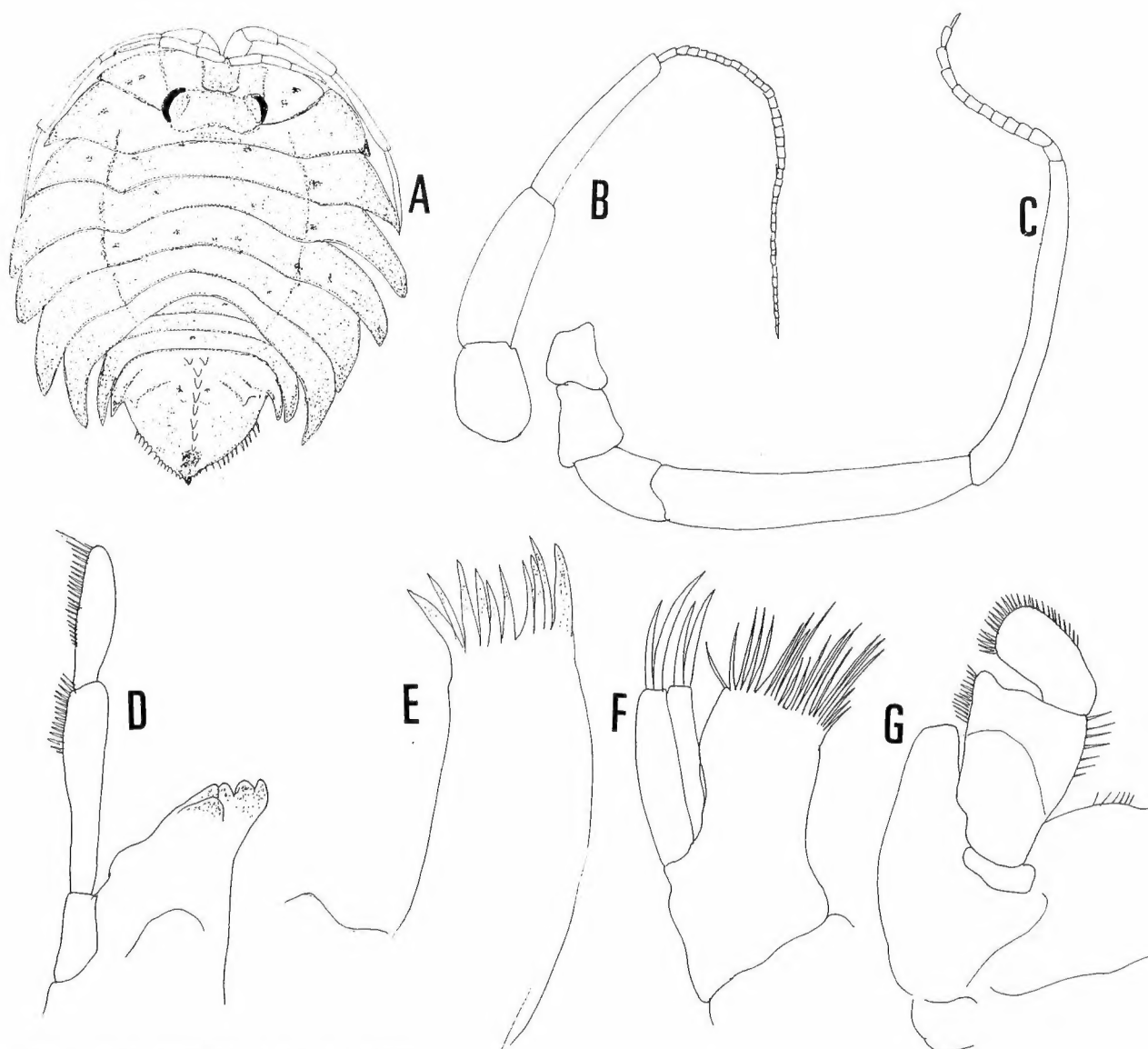


Fig.2. *Ceratoserolis trilobitoides* (Eights 1833).

A. Dorsal view; B: Antennule; C: Antenna; D: Mandible; E: Maxillula; F: Maxilla; G: Maxilliped (All: A male specimen from Gunnerus Bank).

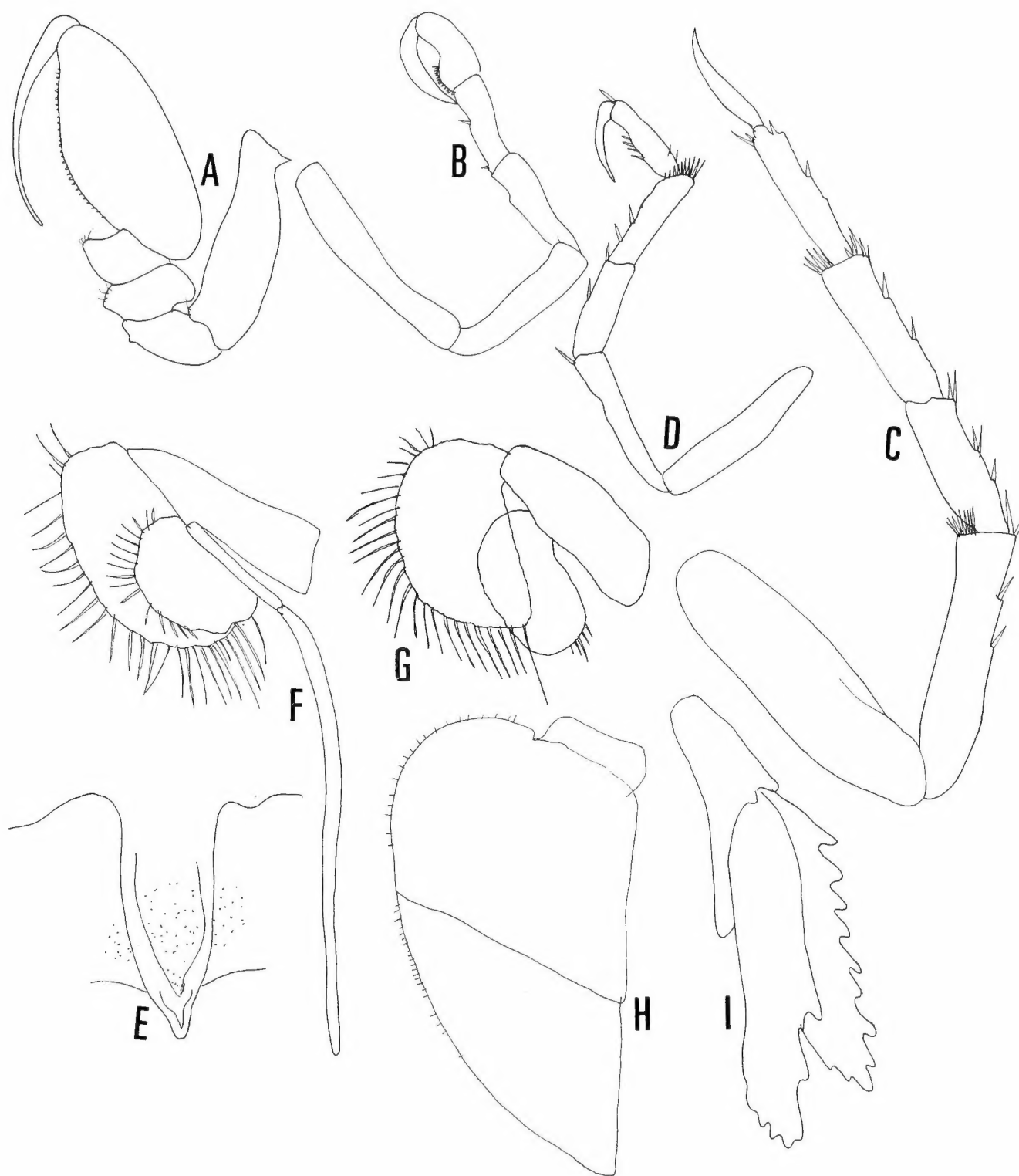


Fig.3. *Ceratoserolis trilobitoides* (Eights 1833).

A: Pereopod 1; B: Pereopod 2; C: Pereopod 5; D: Pereopod 7; E: Penis; F: Pleopod 2; G: Pleopod 3; H: Pleopod 4; I: Uropod (All: Male specimen from Gunnerus Bay).

yellow in alcohol. Eyes crescent-shaped, each eye with about 20 ommatidia. Pleotelson rounded triangular, with pointed posterior tip, a series of 7 medial projections on the medial line and pair of protuberances, and 15-17 small spines on lateral margin.

Antennule (Fig. 2B), reaching the pereonal somite, peduncle 3-segmented; flagellum composed of 39- 44 segments.

Antenna (Fig. 2C) long, reaching the posterior part of second pereonal somite; peduncle 5-segmented; fourth and fifth segments long; flagellum 12 segments. Mandible (Fig. 2D); pars incisiva 4-headed; lacinia mobilis with a tooth; palp 3-segmented; second segment longest, with 15? setae; third segment elliptical with 22-23 setae. Maxillula (Fig. 2E); outer lobe with 10 setae. Maxilla (Fig. 2F): both rami of outer lobe with 2 setae; inner lobe wide, with 21-22 setae. Maxilliped (Fig. 2G): endite rectangular; palp 4-segmented, first segment small second and third segments rectangular, with many short setae around the margins; terminal segment rounded.

Pereopods 1 (Fig. 3A): basis rectangular, 4.0 times as long as wide; ischium rectangular, 9/20 as long as basis; merus and carpus relatively short; propodus stout, with many short setae on inner margin; dactylus long almost as long as propodus. Pereopod 2 (Fig. 3B): basis long 6.0 times as long as wide, ischium a little shorter than basis; merus rectangular, 5/7 as long as ischium; carpus rectangular and 0.8 times as long as merus, with 2 setae on inner margin; propodus with protruded areas on basal half of inner margin; dactylus longer than propodus. Pereopods 3-6 (Fig. 3C) similar in shape: basis 3.6 times as long as wide; ischium 3/5 time as long as basis, with 3 setae on inner margin; merus a little longer than basis, with a setae on inner margins; carpus rectangular, with a setae at the middle part of inner margin; propodus with heel-like projection on basal part of inner margin, bearing 25 setae. Pereopod 7 (Fig. 3D) slenderer than the preceding ones: basis oblong, 4.9 times as long as wide; ischium 0.8 times as long as basis, with 5 setae on inner-distal corner; merus rectangular; carpus as long as merus; propodus a little slenderer than carpus; dactylus relatively long. Penes (Fig. 3E) pentagonal.

Pleopod 1 small: basis rectangular, 2.5 times as long as wide; endopod 5/9 times as long as basis; exopod as long as basis. Pleopod 2 (Fig. 3F): basis rectangular; exopod semicircular, with 28-30 setae; endopod lanceolate and 3/5 times as long as exopod, with 15-16 setae around the margin; stylus very long, 4.6 times as long as exopod. Pleopod 3 (Fig. 3G): basis rectangular; exopod ellipsoid and bigger than endopod. Pleopod 4 (Fig. 3H) bigger than the preceding three pairs. Pleopod 5 similar to pleopod 4, but a little smaller. Uropod (Fig. 3I): basis triangular; endopod rectangular, with 11 saws-like teeth; exopod a little longer than endopod, with 7 teeth-like projection.

Female: Roughly similar to male except for copulatory apparatus.

Remarks: This species was first described as *Serolis trirobioides* by Eights in 1883. Then Cals (1977) moved to the genus *Ceratoserolis*. As Wägele (1986) pointed out, this species show polymorphism, and according his explanation, the samples examined in this study are most similar to the populations recorded from eastern Weddell Sea (Wägele, 1986), but the former is separated from the latter in the following features: (1) shorter terminal spine (2) less numerous mediodorsal spines of pleotelson and (3) numerous lateral spines of pleotelson.

The specimens in this study are also distinguished from the specimens reported by Gamô (1991) in the following features: (1) shorter medial projection of pleotelson, (2) rounded lateral margin of pleonal area. As Wägele (1986) wrote, this species show polymorphism, and the differences are regarded as only a type of variation within the single species.

Aega antarctica Hodgson, 1910

(Fig. 4)

Aega antarctica Hodgson, 1910.

Material examined: 1 ♀ (31.0 mm in body length) from the sea Bottom, of Breid Bay (70° 09.1'S; 24° 01.9'E), 291-310m, Dec.27, 1984. The specimen (AO2497-0001) is deposited at the National Polar Research Institute.

Description of female: Body (Fig. 4A) 2.3 times as long as wide. Color dull yellow in alcohol. Cephalon triangular. Epimera of pereonal somites protruded laterally. Eye mediocre in size, each composed of about 160 ommatidia. Pleotelson triangular; posterior margin round.

Antennule (Fig. 4B), reaching the middle part of first pereonal somite, composed of 3 peduncular segments and 13 flagellar segments. Antenna (Fig. 4C), reaching the anterior part of 3rd pereonal somite, composed of 5 peduncular segments and 16-17 flagellar segments. Frontal lamina and clypeus (Fig. 4D) as figured.

Mandible (Fig. 4E): palp 3-segmented; first segment rectangular; second segment longer than the first, with 9 setae

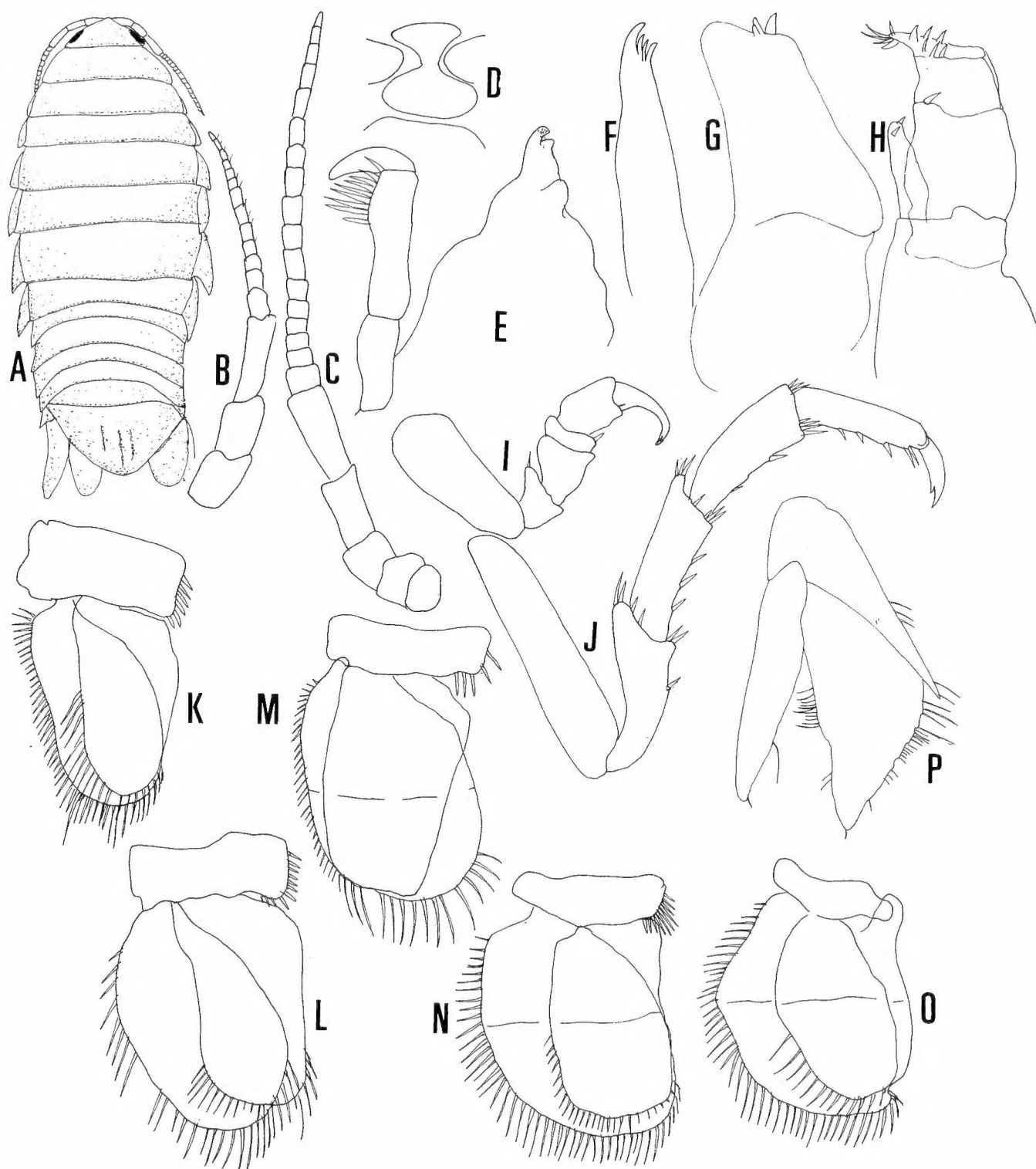


Fig. 4 *Aega antarctica* Hodgson, 1910.

A: Dorsal view; B: Antennule; C: Antenna; D: Clypeus and frontal lamina; E: Mandible; F: Maxillula; G: Maxilla; H: Maxilliped; I: Pereopod 1; J: Pereopod 7; K: Pleopod 1; L: Pleopod 2; M: Pleopod 3; N: Pleopod 4; O: Pleopod 5; P: Uropod 5 (All: Female from Breid Bay).

on the distal half of outer margin; pars incisiva and lacinia mobilis small. Maxillula (Fig. 4F) long, with 4 teeth. Maxilla (Fig. 4G) stout, with 3 stout spines on distal margin. Maxilliped (Fig. 4H): endite small, with 2 setae on distal area; palp 5-segmented; terminal segment with 11 setae.

Pereopods 1-3 (Fig. 4I): basis 2.5 times as long as wide; ischium triangular; merus relatively short; carpus very short; propodus stout; dactylus strongly bents innerwards. Pereopods 4-7 (Fig. 4J): basis oblong; ischium 0.6 times as long as basis; merus rectangular, with 3 spines on inner margin and 3 setae on outer distal margin; carpus a little shorter than merus, with 2 setae on inner margin and 7 setae on distal margin; propodus as long as carpus, with 4-5 setae on inner margin; dactylus bifid.

Pleopod 1 (Fig. 4K): basis rectangular, with 6 hooks; endopod narrow lanceolate; exopod oblique and lanceolate. Pleopod 2 (Fig. 4L): basis rectangular, with 11 hooks; endopod rectangular; exopod lanceolate. Pleopod 3 (Fig. 4M): basis rectangular, with 5 hooks; endopod rectangular; exopod broad and lanceolate. Pleopod 4 (Fig. 4N): basis rectangular, with 10 setae; endopod rectangular; exopod broad. Pleopod 5 (Fig. 4O): basis short, without setae; endopod narrow lanceolate; exopod lanceolate. Uropod (Fig. 4P): basis triangular; exopod wider than endopod.

Remarks: The present specimen can be identified as *Aega antarctica* Hodgson, 1910, described from the deep sea of Antarctica, but the following differences were recognized: (1) a little longer body shape, (2) less numerous setae on pereopods, (3) less numerous maxilliped and (4) less acute posterolateral area of pleotelson.

***Aega* sp. (aff. *ushakovi*, Kussakin, 1967)**

(Fig. 5)

Material examined: 1 ♀ (28.0 mm in body length), Breid Bay (70° 09.1'S; 24° 01.9'E), Dec. 27, 1984. The specimen (AO2498-0001) is at the National Polar Research Institute.

Description of female: Body elliptical, 2.5 times as long as wide. Cephalon triangular, with a small medial protrusion at antero-medial part. Eyes big, each eye composed of about 400 ommatidia. Epimera of pereonites protruded postero-laterally. Pleotelson triangular.

Antennule (Fig. 5B), reaching the second pereonal somite, composed of 3 peduncular segments and 14-15 flagellar segments. Antenna (Fig. 5C) reaching third pereonal somite composed of 5 peduncular segments and 20 flagellar segments. Frontal lamina and clypeus (Fig. 5D) pentagonal.

Mandible (Fig. 5E): pars incisiva 2-headed; processus molaris small; palp with 3 segments, second segments with 11 setae; terminal segments with 20 setae on outer margin. Maxillula (Fig. 5F) slender, with 5 setae, 2 of which are bigger than the others. Maxilla (Fig. 5G) slender, with 2 claws on the distal border. Maxilliped (Fig. 5H): endite slender; palp 5-segmented third segment biggest, with 2 spines.

Pereopods 1-3 (Fig. 5I): basis oblong, 3.5 times as long as wide; ischium pentagonal; merus almost square; propodus about twice as long as wide; dactylus long. Pereopod 5 (Fig. 5J): basis 4.0 times as long as wide, with 7 setae; ischium 2/5 as long as basis, with 2-3 setae on inner margin as long as and 5-6 setae on distal margin; merus as long as ischium, with 4 setae on inner margin and 6-7 setae on distal margin; carpus 0.85 times as long as merus, with 4 setae on inner margin; dactylus short. Pereopod 7 (Fig. 5K): basis oblong; ischium 1/3 time length of basis; merus 1.5 times as long as ischium; carpus a little shorter than merus; propodus a little shorter than carpus, with 5 setae on inner margin.

Pleopod 1 (Fig. 5L): basis, with 3 setae, both rami lanceolate. Pleopod 2 (Fig. 5M): basis stout; both rami lanceolate. Pleopod 3 (Fig. 5N): endopod broad, with a concavity and a series of setae around the margin. Pleopod 4 (Fig. 5O): endopod triangular and small; exopod wide and round. Pleopod 5 (Fig. 5P): endopod small and lanceolate; exopod large. Uropod (Fig. 5Q): basis triangular; exopod lanceolate; endopod rhomboid.

Remarks: The species is allied to *Aega ushakovi* Kussakin, 1967 recorded from Chile, but the former is separated from the latter in the following features: (1) longer body, (2) less numerous setae of maxilliped, (3) narrower posterior part of pleotelson and (4) shorter eyes.

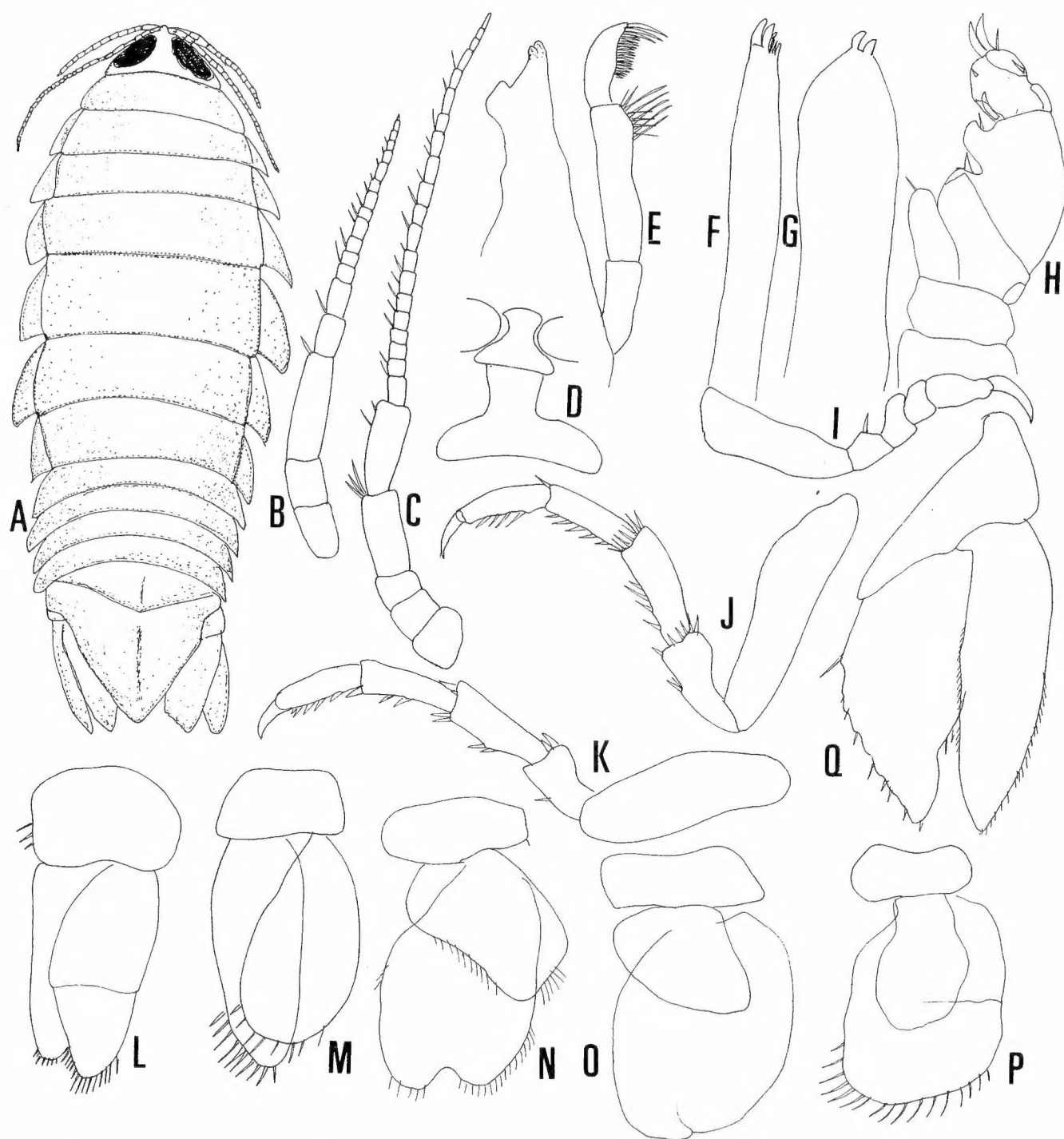


Fig. 5. *Aega* sp. (aff. *ushkovi*, Kussakin, 1967).

A: Dorsal view; B: Antennule; C: Antenna; D: Clypeus and frontal lamina; E: Mandible; F: Maxillula; G: Maxilla; H: Maxilliped; I: Pereopod 1; J: Pereopod 5; K: Pereopod 7; L: Pleopod 1; M: Pleopod 2; N: Pleopod 3; O: Pleopod 4; P: Pleopod 5; Q: Uropod (All: Female from Breid Bay).

Suborder Anthuridea

Family Paranthuridae

***Accalathura gigantissima* Kussakin, 1967**

(Figs .6)

Accalathura gigantissima Kussakin, 1967, p.252-255, figs. 18-19.

Material examined of female: 1 ♀ (21.3 mm in body length), Breid Bay (70° 09.1'S; 24° 01.9'E), 291-310m, Dec.27,

1984, and 1♀ (27.7 mm in body length), Gunnerus Bank, (68° 23. '57'S; 34° 07.5'E), 281-282m, Feb.25, 1985. The specimen (AO2499-0001) is deposited at the National Polar Research Institute and another specimen (TOYA Cr-13108) at the Toyama Science Museum.

Description of female: Body elongated, 15.5 times as long as wide. Mutual length of cephalon and 7 pereonal somites is 1: 2.1: 2.2: 2.4: 2.0: 2.1: 2.0: 1. Body rigid. Color white in alcohol. Cephalon almost square, with a pair of lateral process, with medial process equally protruded; each pereonal segments subequal in length. Pereonite 7 is 1/3 of the pereonite 6 in length. Dorsal pits lacking. All suture lines of the pleonal somite visible from the dorsal view. Pleotelson (Figs.6 L) lanceolate, equally exceeding beyond both uropods, with a statocyst.

Antennule (Fig. 6B) exceeds the medial part of cephalon; peduncle 4-segmented; first segment stout, second segment 1/3 as long as the first; third and fourth segments rectangular; flagellum composed of 31 segments. Antenna (Fig. 6C) reaches the anterior part of first pereonal somites; peduncle four-segmented; flagellum 20-21 segmented.

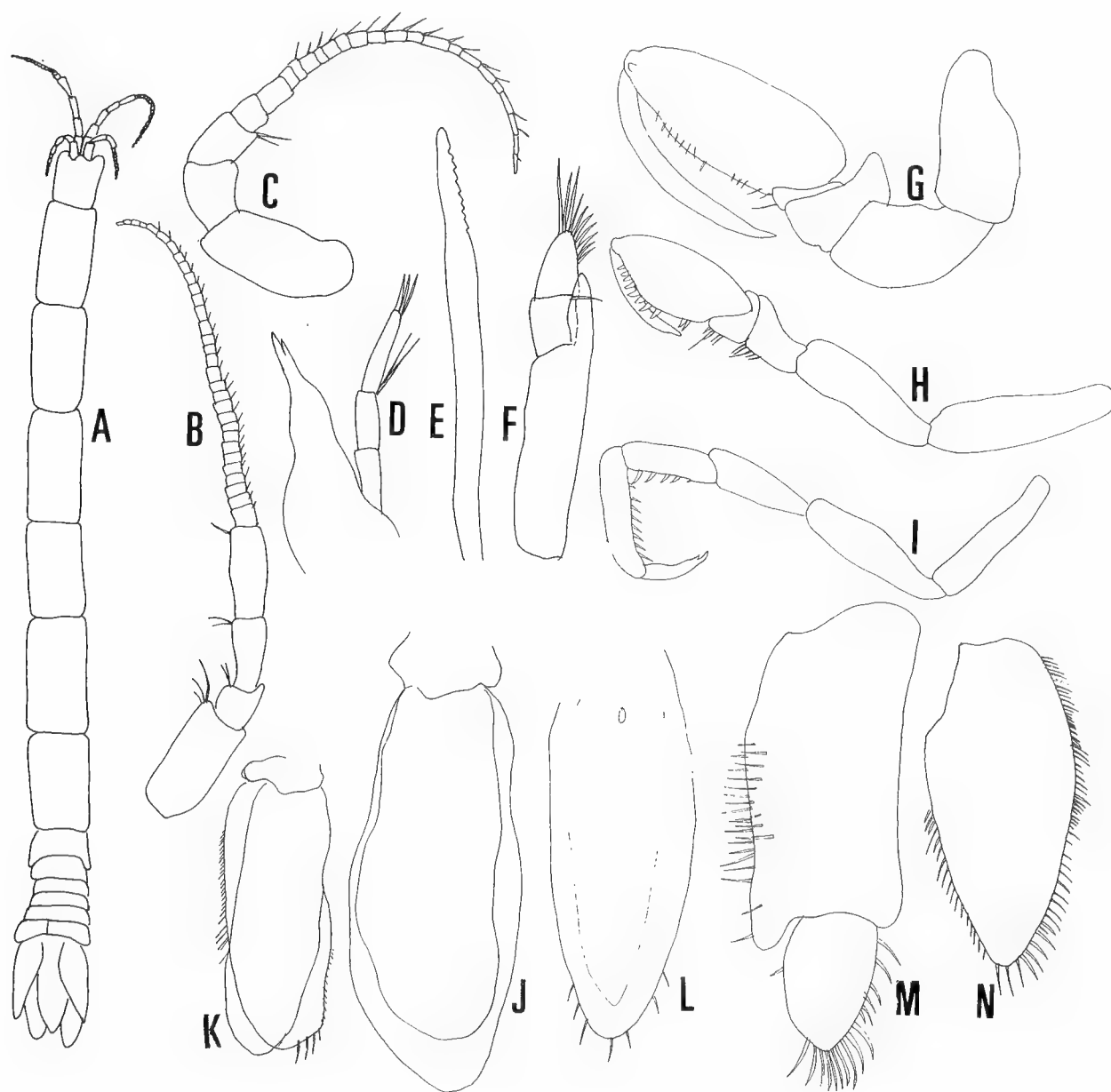


Fig. 6 *Accalathura gigantissima* Kussakin, 1967

A: Dorsal view; B: Antennule; C: Antenna; D: Mandible; E: Maxillula; F: Maxilliped; G: Pereopod 1; H: Pereopod 2; I: Pereopod 3; J: Pereopod 4; K: Pereopod 5; L: Pleotelson; M: Endopod of uropod; N: Exopod of the uropod. (All: Female from Breid Bay).

Mandible (Fig. 6D): palp three-segmented; terminal segment with 3 setae. Maxillula (Fig. 6E) long, with 9-10 saw-like teeth near the distal area. Maxilliped (Fig. 6F): palp two-segmented; endite protruded.

Pereopods 1 (Fig. 6G): basis elliptical; ischium as long as basis; merus very short; carpus very short; propodus stout, with 15-17 setae on inner margin; dactylus long. Pereopods 2-3 (Fig. 6H): basis oblong; ischium 7/9 as long as wide; merus a little shorter than ischium; carpus short; propodus relatively stout, with 8-10 setae on inner margin; dactylus a little shorter than propodus. Pereopods 4-7 (Fig. 6I): basis and ischium oblong; merus a little shorter than ischium; carpus and propodus a little shorter than merus, with 5, 8 setae on inner margin and outer margin respectively.

Pleopod 1 (Fig. 6J): both rami bigger than those of the four lasting lanceolate. Pleopod 2 (Fig. 6K): both rami lanceolate. not characteristic in female. Pleopods 3-5: both rami lanceolate. Uropod (Fig. 6 M-N): exopod lanceolate and covering endopods. Endopodal basal segment rectangular, with many setae.

Remarks: The present specimens agrees with the original description of *Accalathura gigantissima* Kussakin 1967 but the following differences were recognized: (1) lack of basal projection of propodal palm of pereopod 1, (2) less numerous flagellar segments of antennae, (3) less numerous segmentations of maxillula and (4) less numerous setae on third palpal segments of mandible.

Suborder Valvifera

Family Arcturidae

Antarcturus breidensis n. sp.

(Figs. 7-8)

Material examined: 1♂ (holotype, 35.1 mm in body length) and 1♀ (paratype, 33.5. mm in body length) from Breide Bay, (70° 08.5'S; 24° 16.8'E), Dec.29, 1984; 1♀ (allotype, 41.6 mm in body length) from the bottom of Breid

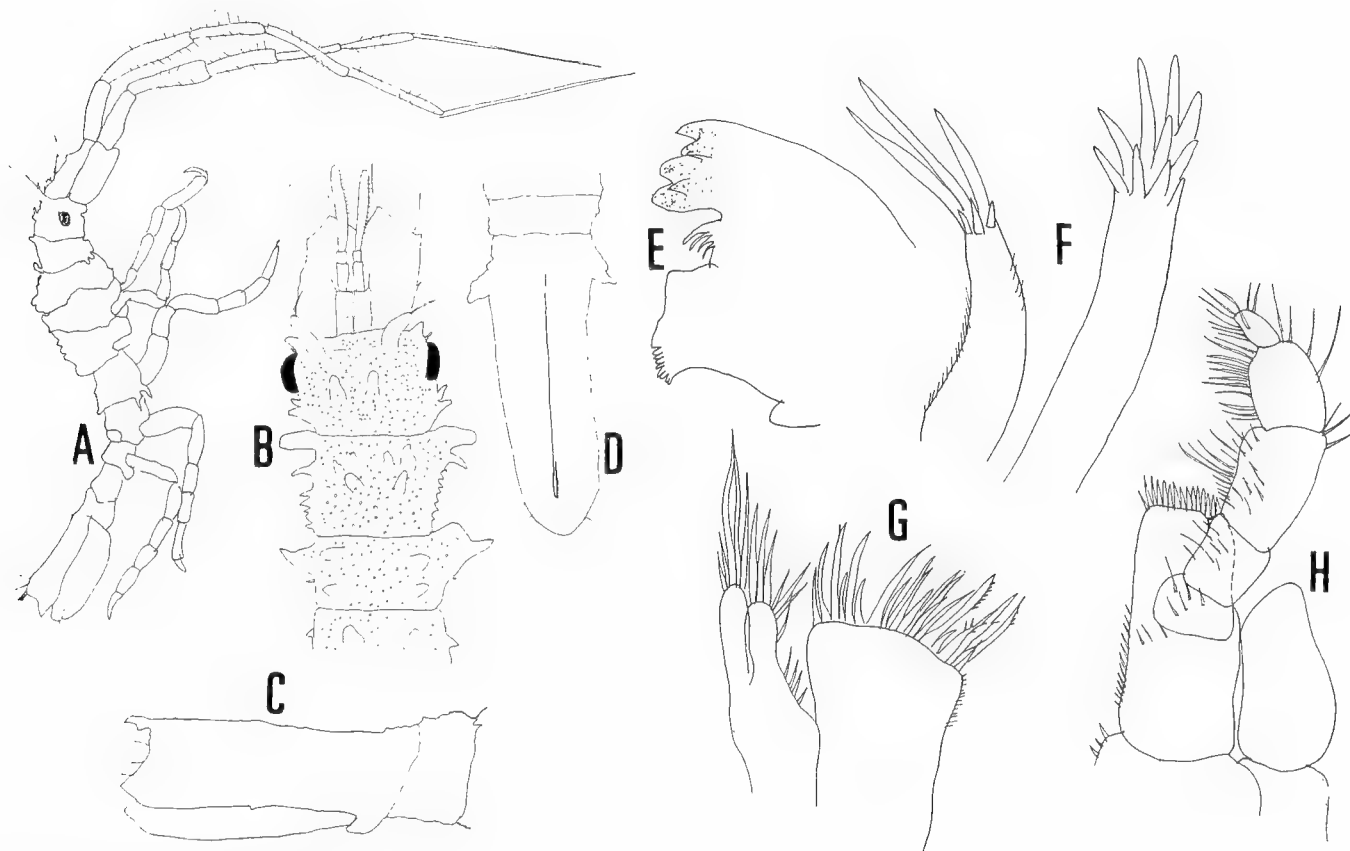


Fig. 7 *Antarcturus breidensis* n.sp.

A: Lateral view; B: Dorsal view of anterior part of body; C: Lateral view of posterior part of body; D: lateral view of the same; E: Mandible; F: Maxillula; G: Maxilla; H: Maxilliped (All: Holotype male).

Bay (70° 09'S; 24° 01'E) Dec.27, 1980. The holotype (AO2450-0001) at the national Polar research Institute and allotype (TOYA Cr-13109) and a paratype (TOYA Cr-13110) at the Toyama Science Museum.

Description of male: Body 6.0 times as long as wide. Body sub-cylindrical its length times. Dorsal surface of cephalon with many minute granules. Frontal margin anterolateral angle almost straight. Eyes relatively big, each eye with 160 ommatidia. Pereonites 1-3 with 1-2 pairs of big horn-like projections anterior margin of cephalon almost straight Dorsal surface of cephalon and pereonites. Lateral margins with lateral projections on each side. Pleotelson and small and acute medial horn medial area.

Antennule (Fig. 8A) composed of 4 segment terminal segment with 13 pairs of aesthetascs. Antenna (Fig. 7C) exceeds far beyond the body length; Peduncle 5-segmented and flagellum composed of 8 segments.

Mandible (Fig. 7E): pars incisiva 2-headed; lacinia mobilis 2-headed; 4 plumose setae behind lacinia mobilis; processus molaris wide. Maxillula (Fig. 8F): outer lobe with 10 teeth at the tip and 3 longer and 3 shorter setae on the top of inner lobe. Maxilla (Fig. 8C): both rami of outer lobe slender with 6-7 setae; inner lobe wide with 22 setae, 7-8 of which bears denticles. Maxilliped (Fig. 8D): endite rectangular and truncated, palp 5-segmented and all are

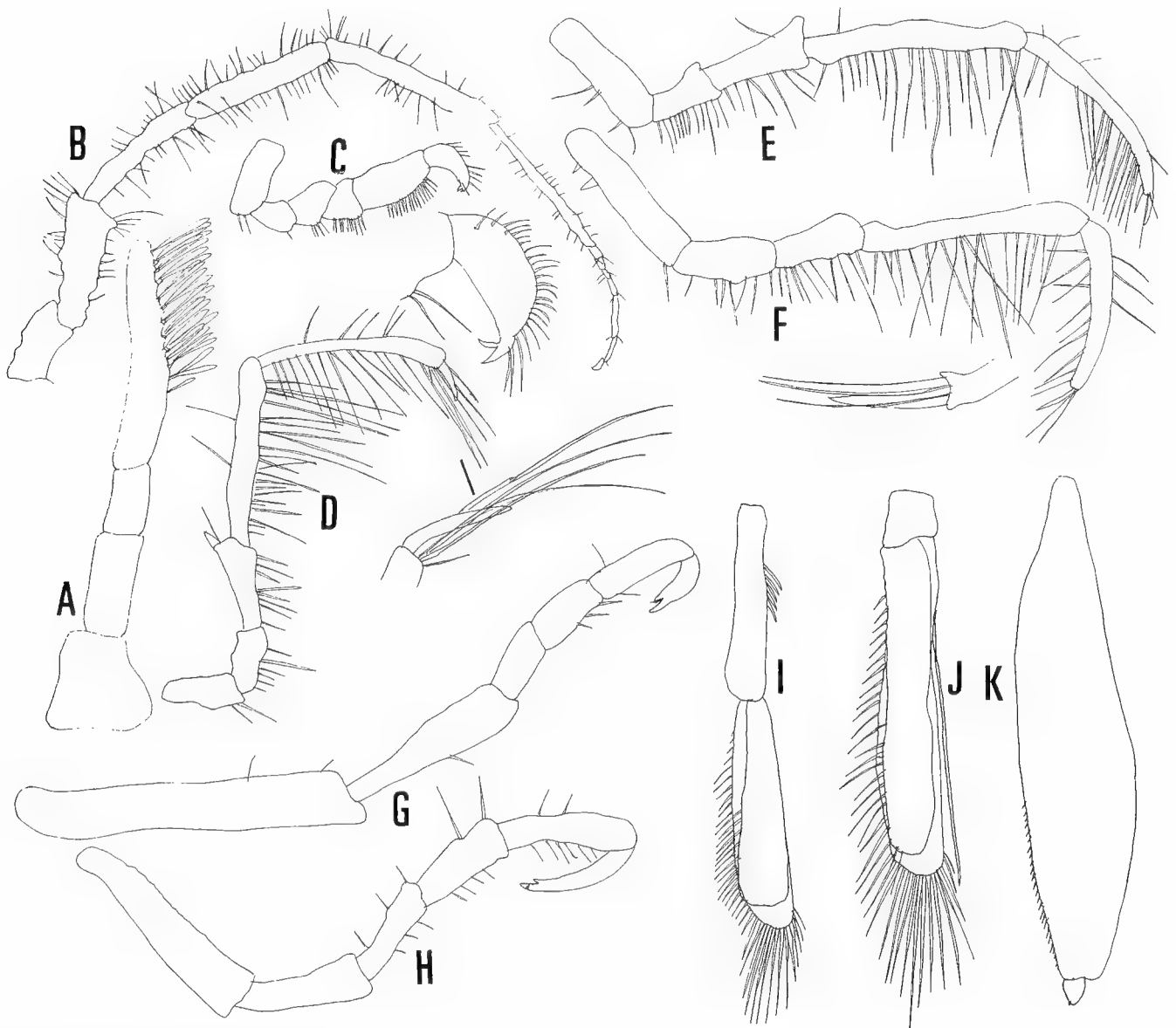


Fig. 8 *Antarcturus breidensis* n.sp.

A: Antennule; B: Antenna; C: Pereopod 1; D: Pereopod 2; E: Pereopod 3; I: Pereopod 4; G: Pereopod 5; H: Pereopod 7. Pleopod 1; J: Pleopod 2; K: Uropod (All. Holotype male).

setose.

Pereopod 1 (Fig. 8C) short: basis rectangular; ischium and merus rectangular, with 4-5 long setae on inner margin; carpus also similar to merus in shape; propodus stout with many setae on outer margin; dactylus recurved. Pereopod 2 (Fig. 8D): basis long, with 2 setae; ischium almost as long as basis, 8-10 setae on outer margin; merus a little longer than ischium, with 10 setae on inner margin and a short one and a relatively long one on outer margin; carpus 1.9 times longer than merus; propodus a little longer than merus, with many short setae on inner margin; dactylus single. Pereopod 3 (Fig. 8E): basis rectangular; ischium half the length of basis, with 11-12 setae on inner margin; merus 1.8 times longer than ischium, with 7-8 long setae on inner margin; carpus 2.0 times longer than merus, with 19-20 long setae on inner margin; propodus a little shorter than carpus, with 4 setae on inner margin; dactylus single. Pereopod 4 (Fig. 8F): basis rectangular with 20-21 stout spines near basal area; ischium shorter than basis, with 7-8 setae on inner margin; merus as long as ischium with 8-9 setae on inner margin; carpus 2.5 times longer than merus, with 20 setae on inner margin; propodus a little shorter than carpus with 10 setae on inner margin and 3 long setae on outer margin; dactylus single. Pereopod 5 (Fig. 8G): basis 7.5 times as long as wide; ischium half the length of basis; merus, carpus and propodus rectangular, with only a few setae; dactylus bifid. Pereopod 6 similar to pereopod 5. Pereopod 7 (Fig. 8H); basis rectangular, with 3-4 protuberances on inner margin; ischium as long as merus; carpus rectangular; propodus rectangular; dactylus long and bifid.

Pleopod 1 (Fig. 8E): basis long with 5 setae on inner margin; both rami long. Pleopod 2 (Fig. 8F): bases square; inner lobe oblong, 5.8 times as long as wide; inner lobe a little longer than exopod, stylus thin and a little exceeds than endopod. Pleopods 3-5 both rami ellipsoid. Uropod (Fig. 8G) basal segment lanceolate; terminal segments small and semicircular.

Female: Apart from sexual characters, same as the male.

Etymology: Derived from the Breide Bay.

Remarks: The present species is allied to, *A. Weddelli* Brandt, 1990 from eastern part of Weddell sea, but the former is separated from the latter in the following features: (1) weaker and less setose spines, (2) lack of spines on outer margin of (3) less spines on pleotelson, (4) stouter projections of first pereopods and (5) less numerous on pereopods.

The species is also allied to the another arctic species, *A. beliavi* Kussakin, 1967 in not having many spines but the former is separated from the latter in the following features: (1) shorter protuberances of antenna, (2) absence of spine on cephalon and posterior part of pleotelson and (3) shorter dactylus of pereopods 5-7.

Family Chaetilidae

Glyptonotus antarcticus Eights, 1853

(Figs. 9)

Glyptonotus antarcticus Eights 1853. p.331.

Glyptonotus acutus Richardson, 1906

Collinge, 1918, p.65-72, Pl I and II Fig. 1-12.

For further synonymy, see. Sheppard, 1957.

Material examined: 2♂♂ (32.5 mm and 90.1mm in body length,) Breid Bay (70° 13.7'S; 24° 25.7-'E) Dec.27 and 1♂ (105.1 mm in body length), Breide Bay (70° 13.7'S; 25° 7'E) Feb.10, 1985; 1984. Two specimens (AO2501-0001 and AO2502-0001) deposited at the National Polar Research Institute and a specimen (TOYA Cr-13112) at the Toyama Science Museum.

Description of female: Body (Fig. 9A) big, 2.0 times as long as wide. Cephalon reniform and posterior margin rounded. Eyes small, each eye with 300 ommatidia. Pereonal somite. Pleon 4-segmented. Pleotelson long bearing medial ridge and posterior medial processes.

Antennule (Fig. 9B) 4-segmented; first segment square, with 9 setae; second segment with 3 setae on distal margin; third segment 1.5 times as long as the second; terminal segment as long as the third. Antenna (Fig. 9C) reaching the posterior part of second peduncular segment; peduncle composed of 5 segments; flagellum composed of 29-30

segments, reaching the middle part of second pereonal somite.

Mandible (Fig. 9D): pars incisiva composed of a single tooth; lacinia mobilis 2-toothed; processus molaris. Maxillula (Fig. 9E): inner lobe with 10 setae; outer lobe with 10 teeth. Maxilla (Fig. 9F): both rami of outer lobe similar in shape, each with 13 setae; inner lobe with 35 setae. Maxilliped (Fig. 9G): endite rectangular with a coupling hook; palp five-segmented; first segment rectangular; third segment widest; fourth segment a little slenderer than the third; terminal segment semicircular, with 25 short setae.

Pereopod 1 (Fig. 9H) short: basis elliptical; ischium $2/3$ as long as basis; merus short, carpus short and triangular, with 3 setae on inner margin; propodous stout, with 6 setae on inner margin. Pereopod 2 (Fig. 9I) longer than the first: basis 3 times as long as wide; ischium half the length of basis, with 3 groups of 3-4 setae on inner margin; merus short, with 2 setae on inner margin, carpus triangular; propodus rounded. Pereopods 4-7 (Fig. 9J and K) much longer than the preceding pairs: basis and ischium rectangular; merus rectangular, with a groups of 3-4 setae on inner margin

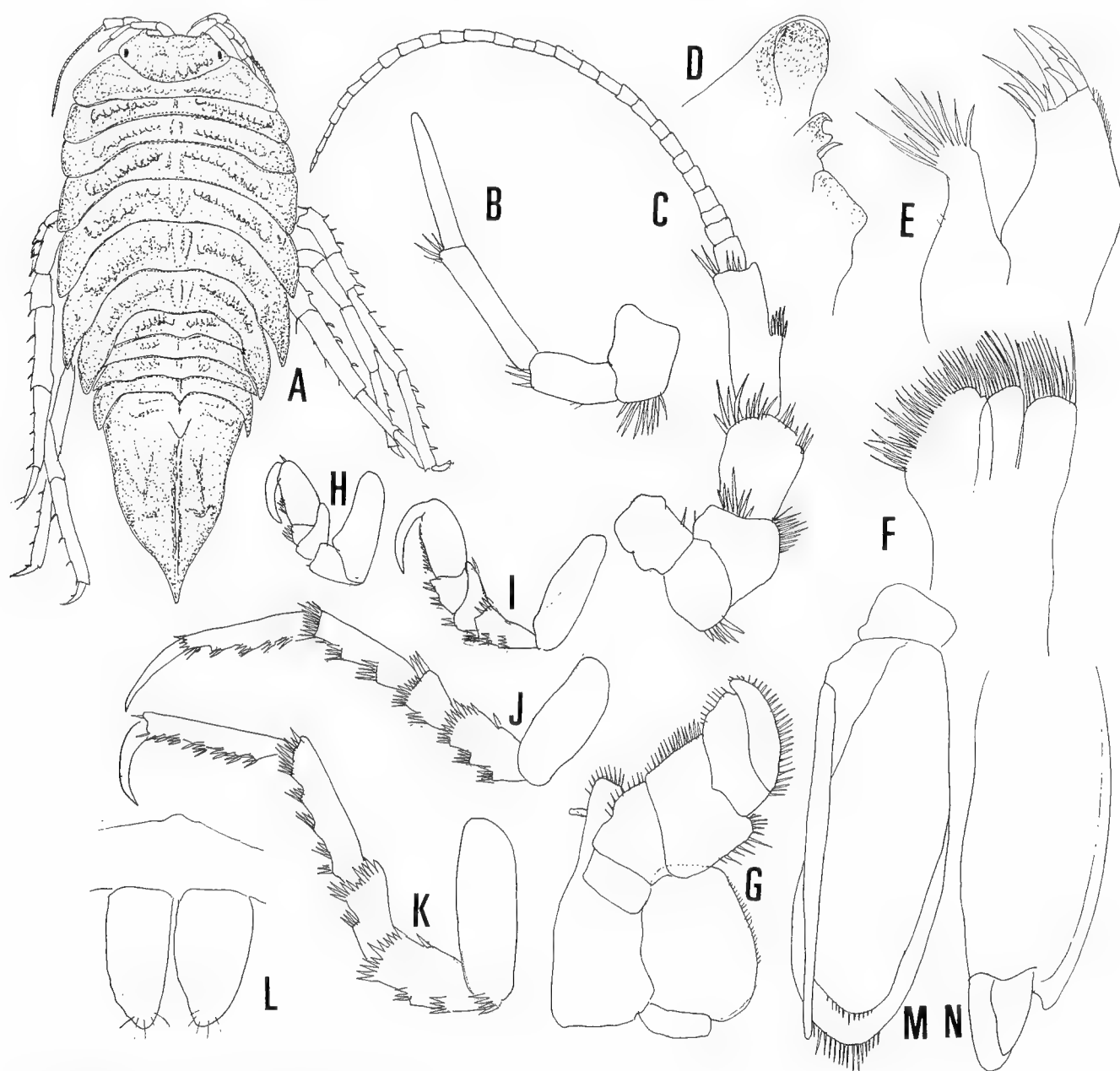


Fig. 9 *Glyptonotus antarcticus* Eights, 1853

A: Dorsal view; B: Antennule; C: Antenna; D: Mandible; E: Maxillula; F: Maxilla; G: Maxilliped; H: Pereopod 1; I: Pereopod 3; J: Pereopod 4; K: Pereopod 7; L: Penes; M: Second pleopod; N: Uropod. (All: Male specimens from Breid Bay).

and 10-12 setae on distal margin, spines on inner margin; carpus twice as long as merus, with 6-7 setae on inner margin and 3 setae on outer margin; propodus as long as basis, with 5-6 groups of 2-3 setae on inner margin at the tip.

Pleopod 2 (Fig. 9M) both rami lanceolate; stylus thin and short not exceeds beyond exopod.

Uropod (Fig. 9N) long; basal segment big and round; terminal segment small.

Remarks: The present specimens are identified as *Glyptonotus antarcticus* Eights 1853, but the following differences are recognized: (1) a little shorter cephalon, (2) less acute tip of pleotelson and (3) presence of coupling hooks on lateral border of maxilliped.

Suborder Gnathiidea

Family Gnathiidae

Euneognathia gigas (Beddard, 1886)

(Figs. 10-11)

Anceus gigas Beddard, 1886, p.120.

Euneognathia gigas Steffing, p.338, pl. XIV(2) For further synonymy, see Monod (1926).

Material examined: 2 ♂♂ (14.6-15.4 mm in body length) Breid Bay (70° 13.7'S; 24° 25.7'E), Feb.10, 1985; Breid

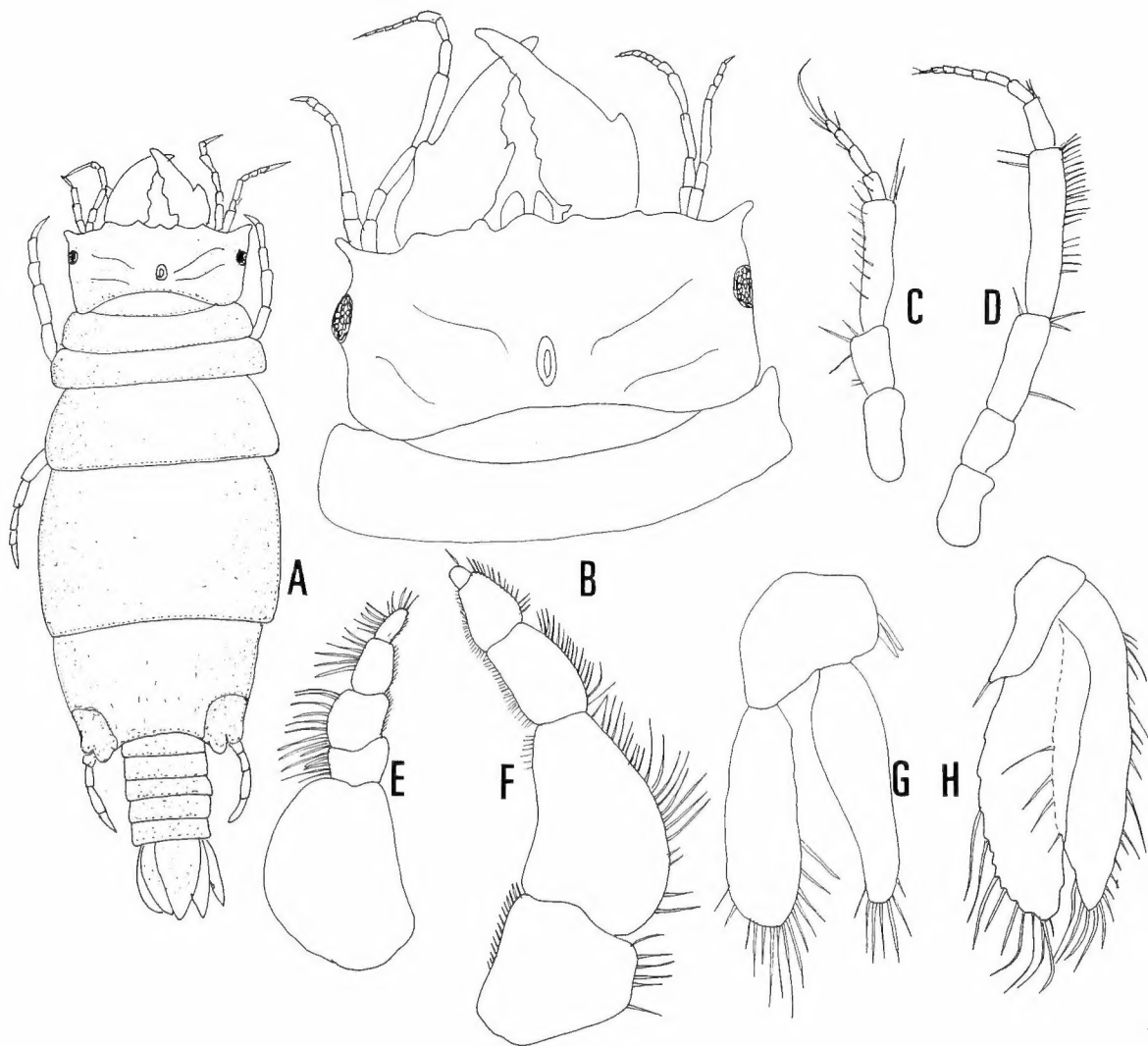


Fig. 10 *Euneognathia gigas* (Beddard, 1886)

A: Dorsal view; B: Cephalon in dorsal view; C: Antennule; D: Antenna; E: Maxilliped; F: Pylopod; G: Pleopod 2; H: Uropod (All: Male from Breid Bay).

Bay (70° 09'1"S; 24° 01-9'E), 291-310m, Dec.27, 1984) Feb.10, 1985, and 1♂ (15.1 mm in body length) Breid Bay, Dec.27, 1984 Two specimens (AO2503-0001 and AO2504-0001) are deposited at the National Polar Research Institute and a specimen (TOYA Cr-13111) at the Toyama Science Museum.

Description of male: Body (Fig. 10A) elongate, 2.8 times as long as wide. Cephalon short, 3/8 as long as wide; ocular lobe narrow and convex; sessile mediocore in size, each eye with approximately 30 ommatidia. Dorsal sulcus small. Mutual length five pereonal somites are 1: 1: 2: 4: 3. Posterolateral angle of last pereonal somite slightly protruded backwards.

Antennule (Fig. 10D): peduncle 3-segmented; first and second segments rectangular; third segment as long as the second, with 9-10 setae of inner margin; flagellum composed of 4 segments; terminal segment long with a long seta and 2-3 setae. Antenna (Fig. 11D) reaching the posterior part of cephalon peduncle 4- segmented and fourth long with 20 setae; flagellum 7-8 segmented.

Mandible (Fig. 10B): no distinct mandibular blade; mandibular incisura rather acute; mandibular seta lacking. Maxilliped (Fig. 10E) five-segmented, first big and rounded; second to fourth segment; terminal segment small and elliptical. Pylopod (Fig. 10F) five-segmented; first segment pentagonal; second widest and largest third and fourth segments rectangular; terminal segment round and small.

Pereopod 1 (Fig. 11A): basis elliptical, 5.0 times as long as wide; ischium, 2/3 as long as basis; merus 62% as long as ischium; carpus 80% as long as wide; propodus as long as merus, with 2 stout setae on inner margin. Pereopod 2 (Fig. 11B): basis oblong, with sinuate outer margin; ischium as long as basis, with more than 14 setae on inner mar-

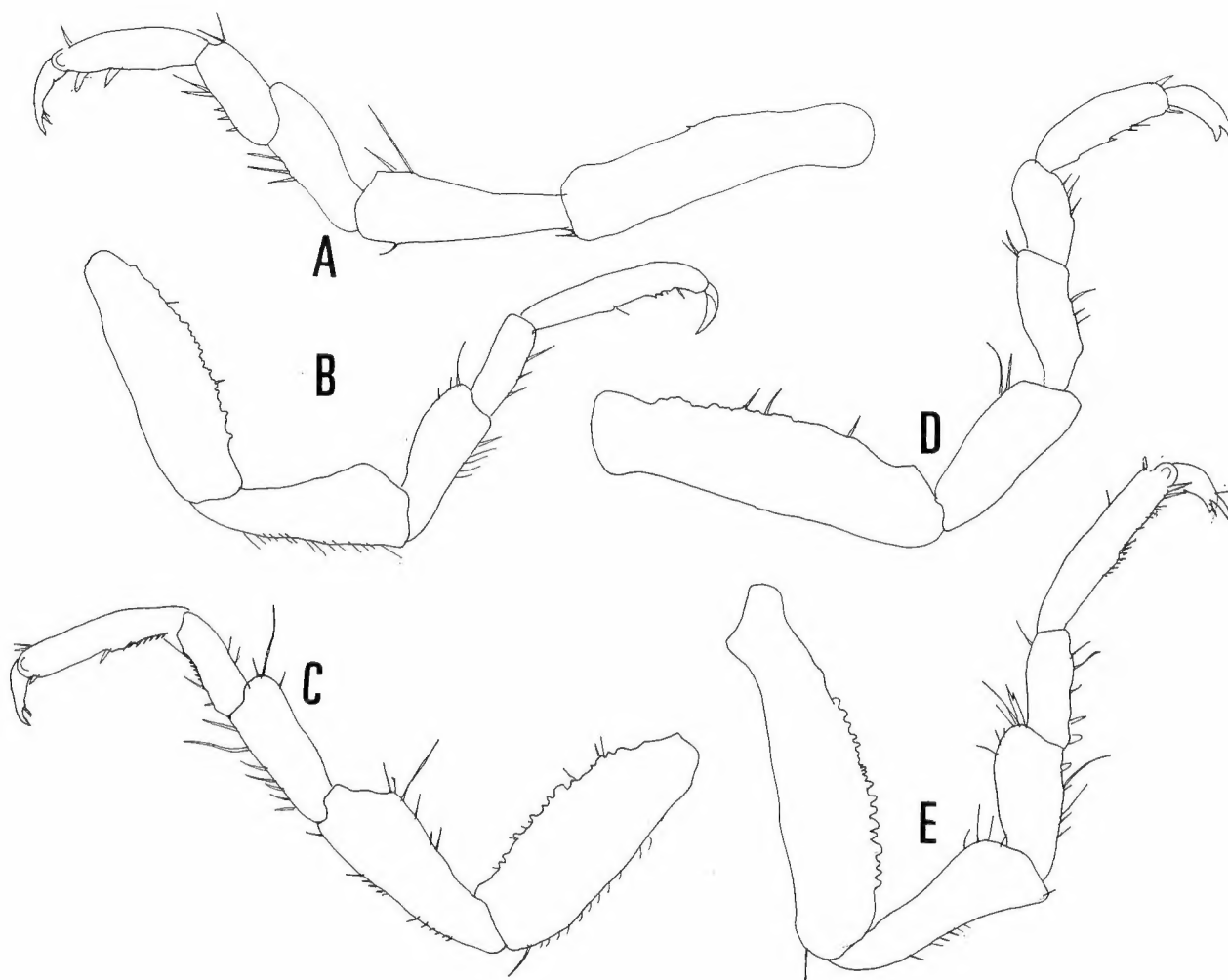


Fig. 11. *Euneognathia gigas* (Beddard, 1886)
A-E: Pereopods 1-5 (All: Male from Breid Bay).

gin, merus $2/3$ as long as ischium; carpus $2/3$ of merus; propodus long. Pereopod 3 (Fig. 11C): basis ellipsoidal, with sinuate outer margin; ischium a little shorter than basis; merus $2/3$ as long as ischium; carpus shorter and slenderer; propodus long, with a row of denticles. Pereopod 4 (Fig. 11D): basis rectangular, 3.9 times as long as wide, with 3 setae on outer margin; ischium $3/7$ as long as basis, with 2 setae on outer margin; merus $4/5$ as long as ischium, with 3 setae on outer margin; carpus $2/3$ as long as merus, with 3 setae on inner margin; propodus as long as carpus, with 3 setae on inner margin and 2 setae on distal margin. Pereopod 5 (Fig. 11E): basis elliptical with sinuate outer margin; ischium a little shorter than basis; merus $2/3$ as long as ischium; and carpus a little shorter and slenderer than merus, with 5 setae on inner margin; propodus with denticles on distal half of inner margin; dactylus bifid.

Pleopod 2 (Fig. 10G): basis relatively small; both rami lanceolate. Uropod (Fig. 10H): basis triangular; both rami elliptical with many setae.

Remarks: The present specimens were identified as *Euneognathia gigas* (Beddard, 1886). But the following features differences were observed: (1) shorter cephalon, (2) absence of postero-lateral angles of the last pereonal somite, (3) wider pleotelson, (4) less acute mandibular incisura, (5) shape of eyes and (6) less exaggerated on tubercles-like structure.

4. Acknowledgment

I wish to express my thanks Dr. Y. Fukuda, Kyushu Jogakuin Junior College, and the crew and scientists of the icebreaker Shirase for collecting and preservation of the specimens, to Dr. H. Hoshiai, Dr., Y. Naito for their generosity of giving me a chance to examine and many staffs of the National Institute of Polar Research. Dr. M. Takeda, of the National Science Museum, Tokyo for choosing me as a researcher of the specimens. I express my last but not least thanks to Dr. H. Kanda of the National Institute of Polar Research Institute for his kindness in reading the manuscripts.

References

- Bastida, R. & M. R. Toriti, 1970. Crustaceos Isopodos: Serolidae. Resultats scientifique des Champagne de la Calypso. *Annals de l'Institut Océanographique* 47 (9): 61-105.
- Beddard, F. E., 1884. Report on the Isopoda collected H. M. S. "Challenger" during the year 1873-1876, Pt.1 The genus *Serolis*. *Challenger Report*, Zoology 11: 1-85.
- Beddard, F. E., 1886. Report on the Isopoda collected by H. M. S. Challenger during the years 1873-1876, Pt.2 The suborder Valvifera. Families Idoteidae, Pseudoitoteidae and Xeracrturidae Fam. n. with a supplement to Isopod Crustacea. *Report of the voyage of H. M. S. Cahlellger* 17: 1-178.
- Brandt, A., 1988. Antarctic Serolidae and Cirolanidae (Crustacea: Isopoda): New genera, new species, and redescrptions. In: R. Fricke (ed.) *Theses Zoologicae* 10. 7-143. Königster: Koelts Science Books.
- Brandt, A., 1990. Antarctic Valviferans (Crustacea, Isopoda, Valvifera): New genera, New species and Redescrptions. Brill, Leiden, 1-176.
- Brandt, A., 1991. Zur Besiedlungsgeschichte des antarktischen shelfes am Beispiel der Isopoda (Crustacea: Malacostraca). *Berichte zur Polarforschung*. 91: 1-240.
- Brandt, A., 1992. Origin of Antarctic isopoda (Crustacea). *Marine Biology* 1 (13): 415-423.
- Cals, P., 1977. Dérive continentale et spéciation du complex *Ceratoserolis* nov. gen., Crustacés antarctiques benthiques connus de l'Arc de la Scotia aux îles Kerguelen. *Compte Rende Hebdomadaires des Séances de l'Academie du Sciences*, Paris 284: 2273-2276.
- Cohon, B. J and G. C. B. Poore, 1994. Phylogeny and biogeography of the Gnathiidae (Crustacea: Isopoda) with descriptions of new genera and Species. *Mem. Mus. Victoria*, 54: 271-397.
- Eights, J., 1833. Description of a new crustaceous animals found on the shores of the South Shetland Islands, with remarks on their natural history. *Transactions of the Albany Institute* 2 (1): 53-57.
- Gamo, S., 1991. On some Serolid Isopod Crustacean (Flabellifera) collected by the Japanese Antarctic Research Expedition from the Antarctic Sea. *Sci. Rept. Yokohama Natl. Univ. Ser. II. No. 38*: 1-21 (in Japanese).

- Harrison, K. & G. C. B. Poore, 1984. *Serolis* (Crustacea. Isopoda. Serolidae) from Australian species from Victoria. *Mem Museum* 45: 13-31.
- Hodgson, T. V., 1910. Crustacea IX. Isopoda. National Antarctic. Expedition. 1901-1904. Natural History 5 Zoology and Botany, London 5 (9): 1-77.
- Kussakin, O. G., 1967. Fauna of Isopodes and tanaidacea in the coastal zone of the Antarctic and subantarctic In: Biological results of the Soviet Antarctic Expedition (1955-58). 3 *Iss, Fauna Morei* 4 (12) 224-380.
- Monod, T., 1926. Les Ganthiidae. Essai monographique (morphologie. Biologie. Systematique). *Memoirs de la Societe des Science naturelle de Marodoc*. 12: 1-667.
- Nordenstams, A., 1933. Marine isopoda of the families Serolidae, Idoteidae, Pseudidotheidae, Arcturidae, Parasellidae, Stenetriidae mainly from the South Atlantic. *Zoology of the Royal Swedish, Antarctic. Expedition* (1901-1903) 3 (1): 1-248.
- Numanami H. and T. Okutani, 1990. Two trichotroid gastropods collected by the icebreaker Shirase from Breid Bay, Antarctica with proposal of a new subgenus. *Proc. NIPR Symp. Polar Biol.* 3: 80-90.
- Poore, G. C. B., 1990. Two new species of isopod crustacean belonging to Australian endemic genera (Serolidae and Chaetiliidae) *Mem. Mus. Vict.* 51: 99-107.
- Sheppard. E. M., 1933. Isopod Crustacea, Part 1, The Family Serolidae. *Discovery Report*, 7: 253-362.
- Sheppard, E.M., 1957. Isopod Crustacea. Part II: The Suborder Valvifera. Families: Idotheidae, Pseudidotheidae and Xenarcturide fam. nov. with a supplement to isopod Crustacea, part I. The family Serolidae. *Discovery Rep.* 29: 141-198.
- Takeuchi, I. and M. Takeda, 1992. Three Species of Amphipod crustaceans collected from Breid and Lützow-Holm Bays Antarctica, during the JARE Cruise Proc. *NIPR Symposia Polar Biology* 5: 65-82.
- Tattersall, W. M., 1921. Crustacea: Tanaidacea and Isopoda. British Antarctic 'Terra Nova' Expedition 1910 *Natural History Report. Zool. Pt. VI* 3 (8): 191-258.
- Vanhoeffen, E., 1914. Die Isopoden der Deutschen Südpolar Expedition 1091-1903. *Dtsch. Südpolar Expedition*, 15: Zool. 7 (4); 447-598.
- Wägele, J. W., 1984. Studies on Antarctic Crustacea Isopoda.1. Anthuridea of the Weddell Sea. *Polar Biol.* 3: 99-117.
- Wägele, J. W., 1986. Polymorphism and distribution of *Ceratoserolis trilobitoides* (Eights, 1833) (Crustacea, Isopoda) in the Weddell Sea and synonymy with *C. cornuta* (Studer, 1879). *Polar Biology.* 6: 127-137.
- Wägele, J. W., 1990. Growth in captivity and aspects of reproductive biology of the Antarctic fish parasite *Aega antarctica* (Crustacea, Isopoda). *Polar Biol.* 10: 521-527.
- Wägele, J. W., 1992. Benthos ecology in the Southern Ocean and the biology and evolution of Antarctic isopoda (Crustacea Peracarida). *Verh. Dtsch. Zool. Ges.* 85 (2): 254-270.
- Wägele, J. W., 1992. Antarctic Isopoda (Crustacea: Peracarida) stress in a polar Environment Beilfelder Ökologischen Beiträge 6: 93-101.
- Wägele, J. W., 1994. Notes on Antarctic and South American Serolidae (Crustacea, Isopoda) with remarks on the phylogenetic biogeography and a description of new genera. *Zool. Jb. Syst.*, 121: 3-69.